

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Improvements in and relating to "Stop-blocks" for the Ends of Pit Cage Winding Ropes and the Like

I, EDGAR ATHELING DAVIES, a British Subject, of "Norfolk House," Tyfica Road, Pontypridd, Glamorganshire, do hereby declare the invention, for which I pray  
5 that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to "stop-blocks" for  
10 the ends of pit cage winding ropes and the like, capped by wedge-type winding-rope "cappels" which have a space at the large end, and has for its object to provide a clamping stop-block of sufficiently small compass  
15 to be fitted in such space, so that in the event of rope-slip the said block is capable of "drawing-down" the wedges, without fouling and pulling off the outer bands of the capel, to cause it to open and release the rope.

20 According to the present invention, a clamping stop-block comprises two somewhat similar members, each of which is an elongated block of metal, preferably steel, of general rectangular section, and having  
25 symmetrically disposed in one of its larger faces, a part-cylindrical channel or groove, the angle of the section being somewhat less than two right angles.

When the two blocks are held with the  
30 two grooved faces in parallel planes and the axes of the part-cylindrical grooves in coincidence, then the ungrooved parts of these faces have gaps between them, and the grooves bound a cylindrical surface which  
35 is preferably slightly in excess (for instance  $\frac{1}{32}$ " in the case of a 1" diameter rope) of the diameter of the rope to which the "stop-block is to be fitted.

40 The two ungrooved parts or edge portions of the blocks have a plurality of parallel spaced bores therethrough at right angles to the axis of the grooves, so that the axes of one block member making up the stop-block

are coincident with those of the other. Between each two coincident bores is arranged  
45 a clamping screw, one bore being tapped with a screw-thread and the other being a clearance bore adjacent which latter the block portion has an enlarged recess for the head of the screw.

50 The curved surfaces of the grooves preferably have grooves of slight depth cut therein; these may be circumferential grooves and spaced axially. For the best results, they are left as cut, that is, they retain their sharp  
55 machined edges, and the grooves surfaces may be case-hardened.

When the stop-block has been assembled at the end of the rope and all the screws are tightened-up, it will be understood that the  
60 rope is tightly held in a clamping grip. Moreover, owing to the slight difference between the radius of the grooves and the radius of the rope, and the fact that there are gaps between the adjacent parallel  
65 grooved faces of the block members, it will be appreciated that in addition to the clamping grip this latter also causes slight deformation of the rope, to increase the overall security.

70 The longitudinal edges of the outer faces of the two block members are preferably chamfered, so that the cross-section of the stop-block is an irregular octagon; or these edges may be "radiused". The periphery  
75 in plan, in any case, has such dimensions that it comes, with adequate clearance, well within any encircling band, for instance the uppermost, of the wedge-type capel.

80 In order that the invention may be better understood, it will now be described with reference to the accompanying drawings, which are given by way of example only and in which:—

Fig. 1 is a front elevation of one form of  
85 stop-block in accordance with the invention.

without the clamping screws.

Fig. 2 is a plan of Fig. 1, with the screws in position.

Fig. 3 is an axial sectional side elevation of Fig. 1, and

Fig. 4 is an elevation to a smaller scale, with parts in section, of the upper part of a wedge-type winding-rope cappel fitted to a winding rope having a stop-block in accordance with the invention and as shown in Figs. 1, 2 and 3 clamped to the upper end of the rope.

Regarding the dimensions of any particular clamping stop-block according to the invention, it will be understood that these will correspond to any particular size of wedge-type cappel with which it is to be used. That is to say, when clamped on the end of a rope held by the wedge-type cappel it has adequate longitudinal clearance, on the one hand, below the split suspending eye of the cappel and, on the other hand, above the gripping position of the cappel, and, further, its cross-section, or projected area in plan (which includes screw heads and ends) has adequate clearance within any outer bands of the cappel, which may be adjacent.

In the particular method of carrying the invention into effect shown in the drawing, the stop-block, which is for use with a 1" rope, is made from two somewhat similar half-portions or steel blocks 5 and 6, each  $4\frac{1}{2}$ " long,  $2\frac{1}{2}$ " wide and  $\frac{3}{16}$ " deep. Each longitudinal edge of each block, beginning at  $\frac{1}{16}$ " from each end and with  $\frac{7}{8}$ " spacing, has a plurality of bores therethrough, the bores having  $1\frac{1}{8}$ " between the centres on each side. The bore 7 on the two sides of one block 5 are tapped with  $\frac{7}{16}$ " Whit. threads, and the aligned bores on the other block 6 have  $\frac{1}{2}$ " diameter clearance bores 8,  $\frac{15}{32}$ " long, which open into recesses 9 of  $\frac{3}{32}$ " diameter for the heads 10 of "Unbrako" (R.T.M.) or other screws 20.

The two blocks 5 and 6, assembled as a unit with a  $\frac{3}{16}$ " gap 11 between, are bored out longitudinally in a central position so that each inner face has a longitudinal part-cylindrical groove 12 of  $1\frac{1}{32}$ " diameter (that is  $\frac{1}{32}$ " greater than the diameter of the rope) extending over somewhat less than  $180^\circ$ , owing to the  $\frac{3}{16}$ " gap. The curved surface of this groove has  $\frac{1}{32}$ " grooves 13,  $\frac{7}{32}$ " wide, cut therein, the edge of one groove 13 being spaced  $\frac{3}{8}$ " from the adjacent edge of the next groove 13, and one end groove coming  $\frac{3}{8}$ " from the end 14 of the block, the edges of the channel boring at this end being rounded at 15; the other end groove is  $\frac{15}{32}$ " from the end 16, which is enlarged in a step 17 of  $1\frac{1}{2}$ " diameter. Each longitudinal edge of the exterior surfaces of the made-up stop-block is chamfered, the chamfers 18 of one block portion 6 containing the recesses 9 for the

heads 10 of the screws, whilst the chamfers 19 for the other block portion 5, which are somewhat less angular than the others, have the ends of the tapped bores 7 opening thereinto. The end edges of the two block portions, or some of them, also may be chamfered. In place of chamfering the longitudinal edges, they may be radiused.

Fig. 4 shows the stop-block according to Figs. 1, 2 and 3, and here referred to as a unit 21, clamped to the end of the rope 22 by tightening up all the screws 20 so that the rope 22 is held tightly in a clamping grip due to the slight difference in radius of the grooves 12 and the rope, the grooves 13, the gaps 11, and the slight deformation of the rope set up by the clamping action.

The stop-block 21 is located in the space 23 at the upper end 24 of a usual wedge-type winding rope cappel 25 having wedges 26 and outer bands 27.

By the clearance space between the periphery in plan (Fig. 2) of the stop-block 21 and the adjacent parts of the cappel, it will be understood that in the event of rope slip the stop-block 21 is capable of "drawing down" the wedges, without fouling and pulling off the outer bands 27.

In place of one block member having all the screw bores and the other block member all the recesses for the heads of the screws, one edge of each block member could have screw bores and the other be recessed for the screw heads.

Again, in another arrangement, on each edge of each block member there could be alternate screwed bores and recesses for screw heads, a screwed bore on one member, upon assembly, being aligned with a recessed bore on the other member.

Apart from the advantages of using a stop-block according to the invention already referred to herein, a further advantage is that although they are primarily intended for use with locked coil ropes, they can also be used with stranded-type ropes.

As will be realised, clamping blocks according to the invention constitute a "dry" fixing to the rope, as contrasted with fixing means necessitating the opening-out of the wires of the rope and fixing in a conical bore by pouring in a molten white metal which subsequently solidifies.

As contrasted with the construction according to the present invention, known "dry" fixing means for the same purpose utilise wedges requiring some movement within the fixing to obtain full holding power, whereas dry-fixed stop-blocks according to the present invention are available at all times without the necessity of first "drawing" the rope.

The invention is not limited to the precise forms or details of construction herein described, as these may be varied to suit particular requirements.

## WHAT I CLAIM IS:—

1. A stop-block for the ends of pit cage winding ropes and the like, capped by wedge-type winding-rope cappel which have a space at the large end, comprising two somewhat similar members, each of which is an elongated block of metal, preferably steel, of general rectangular section, and having symmetrically disposed in one of its larger faces, a part-cylindrical channel or groove, the angle of the section being somewhat less than two right angles, so constructed that when the two blocks are held with the two grooved faces in parallel planes and the axes of the part-cylindrical grooves in coincidence, then the ungrooved parts of these faces have gaps between them, and the grooves bound a cylindrical surface which is preferably slightly in excess of the diameter of the rope to which the "stop-block" is to be fitted, the two ungrooved parts or edge portions of the blocks having a plurality of parallel spaced bores therethrough at right angles to the axis of the grooves, so that the axes of one block member making up the stop-block are coincident with those of the other, whilst between each two coincident bores is arranged a clamping screw, one bore being tapped with a screw-thread and the other being a clearance bore adjacent which latter the block portion has an enlarged recess for the head of the screw, the stop-block when clamped to the rope having a longitudinal clearance on the one hand below the suspending eye of the cappel and on the other hand above the gripping portion of the cappel, and also adequate radial clearance between its periphery in plan and the adjacent parts of the cappel when held located in the space at the large end.
2. A stop-block as claimed in claim 1, in which the curved surfaces of the grooves have grooves of slight depth cut therein, and left as cut, for the purposes set forth.
3. A stop-block as claimed in claims 1 and 2, in which the grooved surfaces have circumferential grooves of slight depth cut therein which are left as cut, for the purposes set forth.
4. A stop-block as claimed in claim 1, 2 or 3, in which the grooved surfaces are case-hardened.
5. A stop-block as claimed in claim 1, 2, 3 or 4, in which the longitudinal edges of the outer faces of the two block members are chamfered in such manner that the cross-section of the block is an irregular octagon of such dimensions that it comes, with adequate clearance, well within any encircling outer band of the wedge-type cappel.
6. A stop-block as claimed in claim 1, 2, 3 or 4, in which the longitudinal edges of the two block members are radiused, so that the cross-section of the block in plan comes, with adequate clearance, well within any encircling outer band of the wedge-type cappel.
7. A stop-block as claimed in any one of the preceding claims, in which the bores in one block are all screw-threaded and the bores in the other block are combined clearance bores for the stems of the screws and recesses for the heads thereof.
8. A stop-block as claimed in any of the preceding claims 1 to 6, in which one edge of each block member has screwed bores and the other has clearance bores and recesses for the screw heads, all so arranged that when so held together for clamping, each screwed bore is axially aligned with a clearance bore and recess.
9. A stop-block as claimed in any of the preceding claims 1 to 6, in which on each edge of each block member there are alternate screwed bores and clearance bores and recesses for the screw heads, each screwed bore on one block, upon assembly, being aligned with a clearance bore and recess on the other block.
10. A stop-block for the ends of pit cage winding ropes and the like, capped by wedge-type winding-rope cappel which have a space at the large end, as herein described and shown in Figs. 1 to 3 of the accompanying drawings.

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